lian soil is "self-nitrogenating." Phosphatic manures, on the other hand, appear to be beneficial. Another feature of interest in Australian developments is the growth of farmers' institutes or bureaux, as they call them. In this country a remarkable and parallel development is now in progress (as an outcome of the war) in the shape of women's institutes. The guiding motive in both cases is the stimulation of interest in the problems of rural life through the agency of what modern sociologists would call "herd" instincts, for it seems possible to stimulate in a meeting intellectual interests which remain dormant in the home!

But in regard to agricultural science, Australia is, above all, fortunate in the number of special problems which, as a "new" country, it provides; the investigator finds numberless questions awaiting solution; he is not hampered by age-worn traditions and practices and the habit of mind which they engender; and he has not only a virgin field on which to demonstrate the efficiency of the new weapons which the scientific method has forged, but also, if we may judge from what is recorded, a population ever willing to hear, and even to adopt, some new thing. B.

NOTES.

THE British Scientific Products Exhibition, organised by the British Science Guild, is being opened by Lord Sydenham at King's College, London, as we go to press. The exhibition has aroused wide public interest, and there is no doubt that it will be decidedly successful in stimulating that close union between science and industry upon which progressive prosperity depends. Since the advent of the war much more intelligent attention has been paid to the co-ordination of these national activities than was given in earlier years. The spirit of distrust which existed between scientific workers and manufacturers has been largely dispelled, and an alliance is being formed which should go on increasing in strength for the benefit of each. The man of science formerly confined himself too closely to an academic atmosphere, and did not trouble to understand the problems of industry; while the manufacturer neglected to avail himself sufficiently of the potential industrial developments represented by the rich stores of scientific knowledge accumulated in the laboratory. During the last four years, however, science and industry have been brought into closer relationship, and some of the results of this *entente cordiale* are shown in the British Scientific Products Exhibition. Much yet remains to be done before we can recover all the ground lost by inactivity and unwise legislation; but by giving an indication of what has been achieved, a new spirit will be created which should lead to further progress.

WE much regret to see the announcement of the death on August 10, at seventy-eight years of age, of Prof. O. Henrici, F.R.S., emeritus professor of mechanics and mathematics in the Central Technical College of the City and Guilds of London Institute.

THE *Times* announces that Mr. W. M. Crowfoot, of Beccles, Suffolk, who died on April 6 at eighty years of age, bequeathed a collection of exotic butterflies and moths to his wife for life and then to the Natural History Museum, University College, Nottingham; a collection of shells from the Paris basin, his crag-shells, and other fossils to the Norwich Museum; a collection of shells from the Italian Pliocene basin and a collection of marine, land, and fresh-water shells to the Ipswich Museum.

AN association of chemists engaged in the oil and colour and allied trades has been formed for the purpose of considering and discussing the many complex points which are continually met with in the course of their work. The need for this association has been felt for a long time, and the work undertaken by the chemists of the paint trade on the linseed-oil substitution products has been the foundation on which the association has arisen. The first president is Dr. F. Mollwo Perkin, and the secretary Mr. H. A. Carwood, 53 Groombridge Road, London, E.9.

THE autumn meeting of the Institute of Metals will be held in the rooms of the Chemical Society, Burlington House, on September 10 and 11. Among the communications to be submitted are:—The Resistance of Metals to Penetration under Impact, including a note on The Hardness of Solid Elements as a Periodic Function of their Atomic Weights, Prof. C. A. Edwards; Grain Growth in Metals, Dr. Z. Jeffries; Rapid Recrystallisation in Deformed Non-ferrous Metals, Mr. D. Hanson; The Influence of Impurities on the Mechanical Properties of Admiralty Gunmetal, Mr. F. Johnson; and A Peculiar Case of Disintegration of a Copper-Aluminium Alloy, Dr. R. Seligman and Mr. P. Williams.

THE MINISTER OF MUNITIONS has issued an Order prohibiting the purchase, sale, or delivery of any radio-active substances, luminous bodies, or ores without a permit, and providing that such returns of stocks, etc., shall be made as are from time to time prescribed. The Order applies to all radio-active substances, including actinium, radium, uranium, thorium, and their disintegration products and compounds, luminous bodies in the preparation of which any radio-active substance is used, and ores from which any radio-active substance is obtainable, except uranium nitrate and radio-active substances which at the date of the Order form an integral part of any instrument, including instruments of precision or for time-keeping. Applications in reference to this Order should be addressed to the Controller of Optical Munitions, Ministry of Munitions, 117 Piccadilly, W.1.

PROF. STEPHEN FARNUM PECKHAM, who has died at Brooklyn at the age of seventy-nine, was director of the chemical department of the U.S. Army Laboratory during the Civil War. He held successively the chairs of chemistry in Washington and Jefferson Colleges, Maine Agricultural College, Buchtel College, and the University of Minnesota. In 1898 he was appointed director of a laboratory of the Commissioner of Accounts of New York, and later of the Department of Finance of that city. He had been State assayer to Maine, Minnesota, and Rhode Island. He was the author of an elementary book on chemistry as well as of a report on the production, technology, and uses of petroleum and of a treatise on solid bitumens.

THE death is announced, in his sixty-seventh year, of Dr. Richard Rathbun, the acting director of the Smithsonian Institution at Washington. On graduating at Cornell University in 1875, he was appointed assistant geologist to the Geological Commission of Brazil. In 1879 he was for a short time an assistant in zoology at Yale. He was scientific assistant on the U.S. Fish Commission from 1878 to 1896, having charge of the scientific inquiries subsequent to 1887, and from 1892 to 1896 he was the U.S. representative on the joint commission with Great Britain relative to the preservation of fisheries in waters contiguous to the United States and Canada. Dr. Rathbun was appointed curator of the U.S. National Museum in 1880, assistant secretary to the Smithsonian Institution in 1897, and had been in charge of the U.S. National Museum since 1899. He had written largely on palæontology, marine invertebrate zoology, and the administration of fisheries and museums.

The death in Paris is announced of Prof. Richard Norton, son of Mr. Charles Eliot Norton, professor of fine arts at Harvard. Richard Norton was director of the American School of Classical Studies in Rome from 1899 to 1907. He came of good English stock, and was related, on the English side, to the Sidgwicks and the Darwins. He was at once a trained archæologist, an excellent classical scholar, a critic of fine art, and an adventurous explorer. He worked in Greece with Waldstein, with Boni in Rome, with Hogarth in Egypt, and on his own account in Cyrene. At the beginning of the war he organised the American Volunteer Motor Ambulance Corps, and during the Champagne battle in October, 1915, he disclosed the fact that the German gas apparatus captured dated so far back as 1908, thus proving that the barbarous methods of the enemy had been long premeditated. He received the Order of the French Legion of Honour and the Croix de Guerre for gallantry under fire, and was awarded the British Mons medal.

The position of this country as regard the supply of optical glass at the outbreak of war is often not clearly understood. We are glad, therefore, to correct any misapprehension which may have arisen from an incidental reference to the subject in an article on the British Scientific Products Exhibition in Nature of August 1. Optical glass has been manufactured in this country since 1848 by Messrs. Chance Bros. and Co., Birmingham. When the supply of German glass was cut off in 1914, the experience gained by this firm became an important national asset, and through it an acute situation was saved. Messrs. Chance have supplied nearly the whole of the optical glass required for instruments used by our Forces during the war, and also much of the requirements of our Allies, without any assistance from the formulæ determined by the Glass Research Committee of the Institute of Chemistry. This committee rendered invaluable aid to the manufacture of scientific and heat-resisting glassware, but the needs of optical-instrument makers were met independently by Messrs. Chance, whose output since the outbreak of hostilities has increased twenty-fold. Without their seventy years' experience it would have been very difficult to have produced the supply of optical glass imperatively demanded by conditions of war.

As is well known, the Germans were anticipated by some savage tribes in the use of poisonous gas for war purposes. In a paper entitled "Palisades and Noxious Gases among the South American Indians," by Mr. Erland Nordenskiöld, in *Ur Ymer, Tidskrift utgiven av Svenska sällskapat för Anthropologi och Geographi* (Arg. 1918, H. 3), he quotes authorities, such as Staden, Oviedo y Valdés, and Thevet, to show that tribes like the Tupinambá and Guaranis of the Brazil littoral and on the Rio Parana used poisonous gases in attacking fortified villages. Men went in front of the attacking party, each holding a pan with embers in one hand, and ground red pepper in the other; when the wind was against the Spaniards they sprinkled the pepper on the embers. This was also done in attacks on the Spaniards in Venezuela. In the same way pepper was largely used in exorcising demons and evil spirits. The use of this pepper, known as Aji, would soon be discovered by these Indians, who cultivate the plant extensively. It was only necessary for someone to upset a basin of Aji into the fire, and a hut would soon be cleared of its occupants. The use of the smoke in warfare would be a natural development.

The entrance of the United States of America into the war has prompted Mr. A. Hansen to write to *Science* pointing out that the States possess no national floral emblem. France has its fleur-de-lis, England the rose, Scotland the thistle, but America has no flower with which it is associated in people's minds. Mr. Hansen points out the various characteristics required for a national flower, and comes to the conclusion that the columbine, which is in flower from April to July, is probably the most suitable for the purpose. The correspondence of the generic name Aquilegia with the Latin name of the eagle is also considered to be a point in its favour. Colorado has already adopted the columbine, which is native throughout the States; and though the flowers are somewhat fugitive, no other flower seems to be as suitable. In a later contribution to *Science*, by Mr. F. L. Sargent, it is pointed out that the national flower question was considered so long ago as 1895, and a history of the matter is given in Trans. Mass. Hort. Soc., part 1, 1898. It was then considered that the columbine was the most suitable flower, and its use for the purpose is strongly advocated by Mr. Sargent. Another writer, however, suggests the golden rod (Solidago), a common plant in the States, which has previously been advocated, but does not seem so suitable for national purposes as the more elegant and beautiful columbine.

The future of the Hevea rubber industry in the Federated Malay States and the East generally is a matter of serious consideration and some anxiety. Not only is *Hevea brasiliensis* attacked by various parasitic fungi, such as Fomes, pink-rot, and Phytophthora, some of which have received careful investigation from mycologists, but there are also questions connected with the soil and other conditions of the plantations which also need careful attention. All who are in any way interested in the future of the rubber industry should make a careful study of Prof. J. B. Farmer's address on "Science and the Rubber Industry," delivered before the Royal Society of Arts, and published in the society's Journal for June 21 last. The picture he draws, though somewhat gloomy, is none the less true. Possibly the hope of the future lies in breeding varieties of rubber immune to disease, but this will scarcely be possible until we have a fuller knowledge of the true function and precise chemical composition of the latex of *Hevea brasiliensis*. Moreover, despite the chairman's (Sir Edward Rosling's) remark that there was no direct evidence of a great variation of yield of rubber amongst different trees, there is, as Prof. W. Bateson pointed out, a very large body of evidence that there are wide differences, and of such any breeding experiments will have to take due account. It is much to be hoped that there will be no delay in taking steps to safeguard adequately the true interests of the rubber industry and its future prosperity.

The British occupation of Jerusalem has already, in one important respect, conferred upon the inhabitants the benefits of sanitation. Within the short space of four months, despite difficulties of transport and unfavourable weather, a scheme of water-supply has been devised, executed, and put into commission.

The antiquated and germ-infected method of purveying water in leathern bags through the agency of the water-carrier is now superseded by a series of stand-pipes at various points in the city, fed by a main leading from an untainted source in the hills, where there is a group of springs yielding some 14,000 gallons per hour, which was previously running to waste. During the long period of Ottoman misrule, with its characteristic indifference to health and cleanliness, no attempt had been made to deal with this fundamental question of water-supply. Domestic requirements were met, in a haphazard fashion, from underground cisterns, replenished during the winter rains, most of them polluted and encrusted with dirt, and some even in a ruinous condition. Pending further developments, the British authorities have arranged to refill these domestic reservoirs as often as may be necessary on the preliminary stipulation that they shall be thoroughly cleansed and put in order; a British sanitary officer takes good care to see that this requirement is rigidly observed. The inhabitants can have as much water as they need, and the consumption is stated to be ten times as great as it was last year. The hospitals receive a supply direct from the main.

THE fine series of Maori burial-chests in the Auckland Museum, with a few isolated specimens in other collections, are described in *Man* for July by Dr W. H. R. Rivers and Mr. H. D. Skinner. The chests were used in secondary burial, the bodies being first placed in trees and the desiccated bones collected for re-interment. The custom of placing the dead or their bones in caves is widely spread in Oceania, but neither elsewhere in New Zealand nor in any other part of Polynesia do we know of such chests. Receptacles, often in human form, are, however, used in Melanesia, notably in the Solomon Islands, to preserve the skull or skeleton. In the case of the New Zealand chests, similarity with Melanesian culture comes out in the nature of the chests themselves. In many respects in which the carving departs from the usual characteristics of Maori art it approaches that of Melanesia; and it is noteworthy that the part of the northern island of New Zealand where these chests have been found is characterised by the prominence of negroid or Melanesian characters in the physical features of the inhabitants.

A VIVID description of caribou hunting in Newfoundland appears in the *Brooklyn Quarterly* (vol. v., No. 2). The author, who signs himself "R. H. R.," is chief taxidermist to the Brooklyn Museum, and recounts his experiences during a trip undertaken for the purpose of providing six specimens for the museum. Incidentally, he has some hard things to say of the professional hunter. "These men who hunt for meat are a bloodthirsty lot. They do not hesitate to kill in excess of their legal allowance of three caribou. The wholesale butchery . . . in Newfoundland is a revolting sight." This state of affairs calls for immediate measures if the extinction of the herds is to be prevented. The author fears that they will go the way of the bison if the present rate of destruction is not speedily checked.

MR. R. C. MURPHY, in *Sea Power* for June, gives a brief but illuminating account of the whale fishery of South Georgia, and the part it has played in furnishing glycerine for the manufacture of high explosives. Even before the outbreak of war the humpback whale had been dangerously reduced in numbers, and the announcement in this article that the oil of this animal is particularly rich in glycerine gives occasion for grave forebodings as to the fate of this particular species. But the exigencies of the times have also demanded a very heavy toll on the rorquals of Antarctic waters. This much is apparent from the statement that by the beginning of 1917 no fewer than 660,000 barrels of whale-oil had been dispatched to British ports. For the sake of the future of the whaling industry, not only in these waters, but also at the Cape—for the one depends upon the other—we trust that the issue of whaling licences will be thoroughly revised on the advice of scientific experts, who, until now, have not been consulted in the matter, which has been administered entirely by the Colonial Office.

THE improvement of the natural indigo industry is a subject which is receiving much attention from scientific workers in India, and one aspect of the question is dealt with by Mr. C. H. Hutchinson in a paper entitled "The Importance of Bacterial Action in Indigo Manufacture" (Calcutta: Thacker, Spink, and Co., 1917, pp. 11). The yield of indigo from a given weight of indigo plant is found to depend upon the intervention of bacteria during the steeping process, and while some bacteria operate beneficially, others are detrimental. In the absence of the former the yield is reduced, and the author considers that the presence of these beneficial forms could be secured by artificial inoculation. Some alterations in the shape of the steeping-vats are also suggested in order to bring the bacteria normally present in the walls of the vats into closer connection with the indigo plant.

KEW Bulletin Nos. 2 and 3 were published together, mainly because they contain a valuable paper by Sir David Prain on the genus Chrozophora (Euphorbiaceæ), one species of which is a Languedoc plant, the source of one of the litmus dyes known as turnesol. Both the history of the genus and careful accounts of all the species are given. The paper occupies some seventy pages, but is much too technical for a brief review In the same Bulletin there is an interesting account of experiments which have recently been made in breeding the West African oil-palm *Elaeis guineensis*, both on the Gold Coast and in the Seychelles. The object in view in these experiments was to see if the soft-shelled variety of the oil-palm would breed true, but it has been found that this is far from being the case under the conditions of the experiments. Palms grown from soft-shelled seed have yielded both hard- and soft-shelled nuts even in the same bunches of fruit, and it is clear that no decisive results can be obtained until care is taken to hand-pollinate the flowers of a soft-shelled tree with pollen from a tree of similar character and to protect the flowers, as cross-fertilisation must be of constant occurrence. Not only is it desirable to produce nuts with thin shells easy to be cracked, but it is also necessary to breed varieties of palms which shall be prolific bearers of fruit yielding the finest quality oils. Hitherto the oil-palm has only been a wild crop, but it is of interest to note that recent attempts to cultivate it on the Gold Coast have met with remarkable success, the yield from palms grown in tilled soil at fair distances apart being more than three times as large as that from palms under native conditions. The establishment of plantations in the Federated Malay States and the Seychelles may therefore lead to far-reaching results, and under these more favourable conditions the oil-palm may so flourish that the native industry, unless properly cared for, may collapse and disappear.

ON October 1, 1917, a disturbance, evidently due to an air-wave, was reported at certain places on the Dutch coast. Doors flew open and shut, pictures swung on the walls, and windows clattered. The

Meteorological Institute at De Bilt attributed the disturbance to an explosion which occurred at a munitions factory in the North of England. Accepting this explanation of the phenomenon, a writer in *Oesterreichische Flug-Zeitschrift* for January, 1918, regards it as evidence of a strong current from north-west in the upper air. This current is identified with the one that carried the German airships over France when returning from a raid in England last October, and is referred to as the summer monsoon prolonged into the autumn.

THE Germans are greatly troubled in finding a satisfactory substitute for platinum. Now, however (according to *Metall und Erz*, May 22), they have found that for certain purposes an alloy of nickel and iron may replace platinum. The alloy—called "platinite"—may be used in electric lamps. Nickel-chromium is sufficiently resistant to chemical action to make it a fairly good substitute for platinum for laboratory purposes. Cobalt stands up to strong acids even better than nickel. The low melting-point of gold makes it unsuitable for some purposes, but the melting-point may be raised by adding palladium. The Bureau of Standards (U.S.) has recently tested this latter alloy (known as "palau"), and found it to be superior to platinum in some respects, though inferior in others.

THE April Bulletin of the Bureau of Standards contains a study of the electromagnetic moving-coil galvanometer for alternating currents by Mr. E. Weibel. After obtaining the equations of motion of the coil, he shows that the deflections are proportional to the component of the electromotive force applied to the coil in phase with the excitation of the laminated magnet. The period is shortened by inductance and lengthened by capacity of the external circuit. The intrinsic constants of the instrument are easily determined by experiment, so that the behaviour of the instrument under specified conditions is readily foretold. The instruments which have been constructed on the lines laid down in the paper have a sensitivity at low frequencies much greater than the telephone, greater than the vibration galvanometer, and about equal to the best direct-current instruments. At high frequencies of the order 2000 many precautions must be taken to ensure accuracy; amongst others, the moving coil and circuit near it should be enclosed in a metal shield kept at the same potential as the coil.

A TIMELY article on "Planning a Research Laboratory for an Industry," by Dr. C. E. K. Mees, of Rochester, New York, appears in the July issue of the *Scientific Monthly*. The research laboratory, for example, of a textile-dyeing business with an annual turnover of 200,000*l.* per annum should cost about 2000*l.* and the equipment about 1000*l.* It should have, to begin with, a staff of four with salaries totalling 2000*l.* per annum. The organisation should be on the departmental system—that is, there should be a head of the laboratory and three heads of departments of physics, chemistry, and biology respectively. As the laboratory justifies itself, additions to the staff of each department will become necessary, and these additions will be responsible to the heads of departments, although with further growth provision should be made for their becoming heads of new departments. The great object of the firm should be to get hold of a capable man for the head of the laboratory, as success or failure depends on him. If such a man is available it is best to leave the organisation in his hands, for there is no evidence for the belief that an investigator is not a good administrator.

To the *Biochemical Journal* for June Dr. J. C. Drummond contributes an account of further work on what has been called the "water soluble B," or water-soluble accessory growth-promoting substance (compare NATURE, March 21, p. 52). The influence of the substance upon the nutrition and nitrogen metabolism of the rat was studied. The food consumed by rats fed upon a diet deficient in the water-soluble accessory substance seems to be reduced to that sufficient to supply the calorific requirements of maintenance, and, although the consumption may be increased by the addition of flavouring agents (*e.g.* meat extract) to the diet, no growth is observed unless the agent contains the water-soluble substance. Addition of an extract of the latter to the inadequate diet causes a greatly increased food intake, immediately followed by growth, and the amount of growth is proportional, within certain limits, to the amount of accessory substance added. Evidence was obtained that the length of time a rat can maintain its body-weight upon a diet deficient in the water-soluble substance is directly proportional to the age at which the restriction is imposed. The only apparent deviation from the normal nitrogen metabolism by rats fed upon the deficient diet was the appearance of creatinuria, accompanied by a slow wasting of the skeletal muscles. The cause of the fatal decline which inevitably follows a deficiency of the water-soluble substance was not discovered, but symptoms of nerve disorder were observed before death in three cases. Actively growing animal tissues (embryos, tumours), desiccated pituitary gland, thyroid, thymus, testicle, and ovarian tissues are deficient in the "water soluble B."

THE New York State Barge Canal, which it was anticipated would be opened to navigation in the early part of this year, is the subject of an interesting article in the *Engineer* of July 19. It is the development of a network of antique waterways dating back, in part, to the beginning of last century. The principal member of the system is the old Erie Canal, linking up Lake Erie with the River Hudson; this was begun in 1817 and completed in 1825. As originally constructed, it had a depth of 4 ft. and a width of about 42 ft. Similar and adjacent enterprises followed, but the advent of the locomotive and the development of railway construction exercised a deterrent influence, so that ultimately several of them failed and had to be shut down. The canals which survived, although enlarged from time to time to meet the growth in size of vessels, gradually lost influence and declined into relative obscurity. In 1882 the Erie Canal had a depth of only 7 ft., and the largest boat carried was of 240 tons burthen. The scheme just completed provides a minimum depth of 12 ft., and minimum widths of 94 ft. in rock cuttings and 125 ft. in earth excavation respectively. The project has, in fact, been so designed as to render it possible to accommodate boats up to 3000 tons, though for the present the bulk of the craft using the canal will scarcely exceed 1500 to 2000 tons. As yet there is a lack of boats of a suitable type, and opinion is much exercised on the matter; possibly the solution of the problem may lie in the adoption of reinforced-concrete construction. There are fifty-seven locks on the new waterway, each 328 ft. long and 45 ft. wide. As the dimensions of a 1000-ton barge recently built—the first of a fleet of such boats for service on the canal—are 152 ft. long and 22 ft. beam, there is evidently ample margin for future expansion. All the locks are operated electrically. The lock at Little Falls, with a range in level of 40½ ft., is notable in that its range is greater than that of any single lock on the Panama Canal. The syphon lock at Oswego, with a range of 25 ft., is the first of its type to be constructed in the United States, and is believed to be the largest of its kind in the world.

We have received a copy of a paper by Mr. K. J. J. Mackenzie and Dr. F. H. A. Marshall, of Cambridge, on "The Inheritance of Mutton Points in Sheep." The paper is published in the Transactions of the Highland and Agricultural Society, 1917, and consists of an account of Mendelian cross-breeding experiments upon merino and Shropshire sheep, carried on over a number of years at Cambridge, and involving three generations of animals. The points dealt with ("over the shoulder," "behind the shoulder," "loin," and "top of leg") show a marked degree of segregation among the cross-bred sheep.

The special feature of the July issue of the "Readers' Guide," just issued by the Norwich Public Library Committee (post free 2*d.*), is a section devoted to the work of Mr. A. H. Patterson, whose valuable collection was recently presented to the Norwich Public Library. A short account of this well-known naturalist's life and writings, by Mr. Geo. A. Stephen, the city librarian, is followed by an annotated bibliography (extending to five pages) of his writings, arranged under the following headings:—Manuscripts, Books and Pamphlets, and Principal Articles. The bibliography, which shows that Mr. Patterson is a prolific writer, should be of much interest and use to naturalists.

OUR ASTRONOMICAL COLUMN.

Borrelly's Comet.—This periodic comet, which was observed in 1905 and 1911, has been detected on its return by M. Fayet, director of the Nice Observatory, the position on August 7·6205 G.M.T. being R.A. 3h. 39m. 52s., S. decl. 16° 14′. M. Fayet, who obtained a very extensive series of observations in 1911–12, had previously computed the first order perturbations by Jupiter and Saturn, and obtained the following elements for 1918 (Marseilles Observatory Circular, No. 29):—

$$T = 1918 \text{ Nov. } 16{\cdot}3484 \text{ G.M.T.}$$

$$\left.\begin{aligned} \omega &= 352^\circ\ 23'\ 29{\cdot}44'' \\ \text{☊} &= 76^\circ\ 55'\ 52{\cdot}86'' \\ i &= 30^\circ\ 29'\ 27{\cdot}28'' \end{aligned}\right\} 1918{\cdot}0$$

$$\phi = 37^\circ\ 57'\ 5{\cdot}78''$$

$$\log a = 0{\cdot}5593451$$

$$\log q = 0{\cdot}1448107$$

The observation indicates that the true value of T is near November 16·62.

The following ephemeris (for Greenwich midnight) is computed with the uncorrected value of T:—

			R.A.		S. Decl.
			h. m. s.		°
Sept.	3	...	4 40 36	...	13 37
	7	...	4 49 20	...	13 10
	11	...	4 57 57	...	12 41
	15	...	5 6 28	...	12 9
	19	...	5 14 51	...	11 33
	23	...	5 23 6	...	10 54
	27	...	5 31 13	...	10 11
Oct.	1	...	5 39 10	...	9 22

Values of $\log r$, $\log \Delta$: September 3, 0·20980, 0·08128; October 1, 0·17291, 9·96205 respectively.

The August Meteors.—These phenomena appear to have returned this year under a more brilliant and abundant aspect than usual. Mr. Denning writes from Bristol that he made observations on July 30, August 2, 5, 6, 8, 9, and 10, and that the number of meteors visible increased with the time. On August 9 forty-nine meteors were seen in 2½ hours' watching, and on August 10 forty-eight were observed in 1¾ hours. On the former date twenty-five Perseids were included in the total, and on the latter thirty-one. The position of the radiant point exhibited the usual displacement from night to night to the north-east. The character of the radiation this year seems to have been more dispersed or diffused than is sometimes the case, and, far from being "a point," the radiant formed an area extending over a diameter of six or seven degrees.

Several fine Perseids were observed, and their positions, as seen from Bristol, were as under:—

Date		G.M.T.	Mag.	Path	
				From	To
		h. m.		° °	° °
August	5	13 54	♀	269 +84½	230 +65
	8	12 47	♃	320 +82	256 +70½
	9	10 33	3 × ♀	332 −13	326 −23
		10 56	♀	17½ +48	5½ +40
		11 6	♃	293 + 3	284 −12
	10	10 4	5 × ♀	33 +84	245 +83
		11 42	♃	20 +20	18 +12½

On August 10 a 2nd mag meteor was seen at 9.54, which had a very long flight of 75° from 62°+77° to 257°+28°.

The night of August 11 was much overcast at Bristol, and all that could be seen was an occasional brilliant meteor in openings of the clouds.

On August 12 the sky was splendidly clear, and an attentive watch, amounting to 2¾ hours in the interval between 9h. 45m. and 13h. 45m. G.M.T., revealed 120 meteors, of which ninety-six were Perseids. The shower was quite brilliant and abundant, though the maximum had probably occurred on the previous night. A magnificent Perseid was seen at 12h. 41m. G.M.T. shooting from 28°+46° to 18½°+35°, and leaving a bright streak. These August meteors have furnished an unusually fine display this year.

THE FUTURE OF THE IRON AND STEEL TRADES.

On July 31, 1916, Mr. Walter Runciman, the then President of the Board of Trade, appointed a Committee to consider the position of the iron and steel trades after the war, especially in relation to international competition, and to report what measures, if any, are necessary or desirable in order to safeguard that position. The Committee consisted of representatives of employers, employed, and those engaged in technical practice. At its first meeting it decided to address to the manufacturers' and workmen's associations in the trades and to the trade Press a circular letter indicating the nature of the inquiry upon which it was engaged, and inviting assistance and co-operation. In reply a number of detailed statements were received, which in the great majority of cases were supplemented by oral evidence.

The Committee states that it has endeavoured to approach the question of the future of the position of the iron and steel industries with a mind free from preconceived political views and economic theories, and that its purpose has been, not to test abstract doctrines, but to establish an ordered plan of action. Political existence, it says, must be founded on commercial and industrial strength, and the problem to which it has attempted to find a solution is:—"To give to the nation industrial resources which in time of peace shall preserve the prosperity of Great Britain, and in time of war shall give her full command of resources adequate to the defence and safekeeping of the Empire."

The scope of the inquiry was so wide that it was decided to treat various subjects separately, and a